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Environmental Response & Remediation

REMEDIAL ACTION PLAN ACTIVITIES REPORT LAKE METALS/PIONEER REFINING SALT LAKE CITY, UTAH

· Project No. 1076-41F

To

Utah Department of Environmental Quality
Division of Environmental Response and Remediation
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SCANNED

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Prepared By:

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April 10, 2007



Mr. Joe Katz Utah Department of Environmental Quality Division of Environmental Response and Remediation 168 North 1950 West P.O. Box 144840 Salt Lake City, Utah 84114-4840 April 10, 2007 Project No.: 1076-41F

SUBJECT:

Remedial Action Plan Activities Report

Lake Metals/Pioneer Refining

Salt Lake City, Utah

Wasatch has prepared this Remedial Action Plan Activities Report subsequent to conducting activities outlined in Wasatch's April 10, 2006, "Remedial Action Plan" at the Lake Metals/Pioneer Refining site which has been accepted into the Utah State Voluntary Cleanup Program (VCP).

Based on the information presented in this report, Wasatch is requesting a Certificate of Completion for the VCP applicants.

Should you have any questions, please do not hesitate to contact us.

Sincerely.

_WASATCH ENVIRONMENTAL, INC.

Rebecca Studenka

Geologist

Julie Kilgore, Principal/ Environmental Manager

Distribution:

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REMEDIAL ACTION PLAN ACTIVITIES REPORT LAKE METALS/PIONEER REFINING SALT LAKE CITY, UTAH

1. INTRODUCTION

Wasatch has prepared this Remedial Action Plan (RAP) Activities report to discuss the completed remedial action activities conducted at the Lake Metals/Pioneer Refining site, which has been accepted into the Utah State Voluntary Cleanup Program (VCP). The RAP activities were conducted in accordance with the approved April 10, 2006, "Remedial Action Plan" submitted by Wasatch to Utah Division of Environmental Response and Remediation (DERR).

As discussed in the RAP, the purpose of the remedial action activities was to remove surficial soils at the site with concentrations of lead and arsenic above determined generic screening criteria for the Lake Metals/Pioneer Refining site. Soil confirmation samples were collected and analyzed to verify the remaining lead and arsenic concentrations at the site were below the generic screening criteria of 800 mg/kg and 100 mg/kg; respectively.

2. SOIL EXCAVATION ACTIVITIES

Between July 31, 2006 and August 16, 2006, Wasatch supervised the removal of surficial soils at the Lake Metals/Pioneer Refining site. The unpaved areas of the site were excavated to approximately six inches below ground surface using a backhoe. Nine confirmatory soil samples (BS-1, 6" to BS-9, 6") were collected at various locations from the base of the excavation. The soil samples were collected in the appropriate containers with gloved hands and transported on ice to a Utah-certified laboratory for lead and arsenic analysis using U. S. EPA Method 60108. The excavated area and confirmatory soil sample locations are presented on Figure 1.

As discussed in the RAP, at the location of previous soil samples LM-SS-03 and LM-SB-03, an area 10 feet by 10 feet (100 square feet) was removed to a depth of approximately two feet below ground surface. Five composite soil samples were collected from the area. One soil sample (#1 BS-2') was collected in ten aliquots from the bottom of the excavation, each aliquot representing 10 square feet of the excavation. The other four samples (#1 SW-W, #1 SW-S, #1 SW-E, and #1 SW-N) were collected in ten aliquots each, each sample taken from one sidewall of the excavation. The soil samples were collected in the appropriate containers with gloved hands and transported on ice to a Utah-certified laboratory for lead and arsenic analysis using U. S. EPA Method 6010B. The excavated area and confirmatory soil sample locations are presented on Figure 1. It should be noted that these sample locations are representations and are not actual locations as numerous aliquots for sample collection were used from the base and sidewalls of this excavated area.

Additionally, at the location of previous soil samples LM-SS-12 and LM-SB-12, an area 10 feet by 10 feet (100 square feet) was removed to a depth of approximately two feet below ground surface. During removal activities of this area, a small old abandoned pipe was discovered in the subsurface which contained a black, odorous substance. The origin of the pipe was unknown. Five composite soil samples were collected from the area. One soil sample (#2 BS-1,2') was collected in ten aliquots from the bottom of the excavation, each aliquot representing 10 square feet of the excavation. The other four samples (#2, SW-W, #2 SW-S, #2 SW-E, and #2 SW-N) were collected in ten aliquots each, each sample taken from one sidewall of the excavation. The soil samples were collected in the appropriate containers with gloved hands and transported on ice to a Utah-certified laboratory for lead and arsenic analysis using U. S. EPA Method 6010B. In addition, based on the discovery of the pipe and its unknown contents, the soil samples were analyzed for volatile organic compounds (VOCs), total petroleum hydrocarbons-diesel range organics (TPH-DRO), total recoverable petroleum hydrocarbons (TRPH) and polychlorinated biphenyls (PCBs) using U.S. EPA Methods 8260B, 8015B, 1664-SGT, and 3545/8082, respectively. The

excavated area and confirmatory soil sample locations are presented on Figure 1. It should be noted that these sample locations are representations and are not actual locations as numerous aliquots for sample collection were used from the base and sidewalls of this excavated area.

On August 7-9, 2006, Wasatch personnel supervised the removal of broken concrete located in the central portion of the site. During removal activities, black stained soil was discovered beneath the concrete. The source of the staining was unknown. Based on the staining, the excavation in this area was extended to approximately 1.5 feet below ground level. Two confirmatory soil samples (BS-10, 1.5' and BS-11, 1.5') were collected from the base of the excavated area formerly beneath the area of broken concrete. Additionally, a small underground concrete vault was discovered in the northern portion of this area. Reportedly, a bailer formerly in use at the site, was previously located in this area. Soil was removed from the vault until maximum extension of the backhoe was reached at a depth of approximately 12 feet below ground surface. A confirmatory soil sample (#3 Base, 12') was collected in the base of the concrete vault. The soil samples were collected in the appropriate containers with gloved hands and transported on ice to a Utah-certified laboratory for lead and arsenic analysis using U. S. EPA Method 6010B. Additionally, based on visual staining, the soil samples were analyzed for VOCs, TPH-DRO, TRPH, and PBCs using U.S. EPA Methods 8260B, 8015B, 1664-SGT, and 3545/8082, respectively. Both excavated areas and their associated confirmatory soil sample locations are presented on Figure 1.

In order to control fugitive dust during soil removal activities, water was sprayed on the ground in the areas under active excavation. Approximately 533 cubic yards of non-hazardous surficial soils were removed from the site and transported to Clean Harbors Grassy Mountain facility near Clive, Utah.

Additionally, based on previous lead concentration analytical results, approximately 50 cubic yards of soil removed from the two excavated areas in the locations of former soil samples LM-SS-03/LM-SB-03 and LM-SS-12/LM-SB-12 was removed from the site and transported to Clean Harbors Grassy Mountain facility near Clive, Utah as hazardous waste. The non-hazardous and hazardous waste manifests are presented in Appendix G.

Once the excavation was deemed completed, approximately 718 tons of clean road base were transported to the site from Staker Parsons Companies in North Salt Lake, Utah. The road base was spread and compacted over the excavated areas. In September 2006, A-Rock Asphalt Services asphalted the excavated areas.

3. FIELD QUALITY CONTROL PROCEDURES

As discussed in the April 2006 RAP, Quality Assurance/Quality Control (QA/QC) soil samples were collected in addition to the field samples. Two field duplicate samples (BS-3 dup and BS-5 dup) and two method spike/method spike-duplicate samples (BS-2 and BS-4) were collected and analyzed. Decontamination samples were not collected as re-usable sampling equipment was not used between soil sample locations. In addition, all field activities were conducted in accordance with applicable EPA guidance and Wasatch's August 18, 2005, "Quality Assurance Project Plan."

4. SOIL EXCAVATION ANALYTICAL RESULTS

Tables summarizing the soil analytical results are presented as Table 1 through Table 6. The soil analytical results are presented in Appendix A through Appendix F. The Data Validation Report completed by an independent third party is presented as Appendix H.

4.1 Total Lead and Arsenic

As specified in the April 2006 RAP, the goal of the RAP activities was to remove surficial soils from the site with concentrations of lead and arsenic in exceedance of 800 mg/kg and 100 mg/kg, respectively. Upon removal of the surficial soils at the site, Wasatch personnel collected 13 base and 8 sidewall confirmation soil samples in the soil excavation area. The analytical results indicated that none of the

confirmation soil samples collected had reported concentrations of lead or arsenic above the determined generic screening criteria. A table summarizing the reported lead and arsenic concentrations is presented as Table 1. The lead and arsenic analytical results are presented in Appendix A.

4.2 TPH-DRO and TRPH

Based on apparent soil staining during excavation activities, four base and four sidewall soil samples collected during excavation activities were analyzed for total petroleum hydrocarbons-diesel range organics (TPH-DRO) and total recoverable petroleum hydrocarbons (TRPH). The analytical results indicated that the soil sample collected from the base of the concrete vault (#3 Base, 12') had a reported concentration of TPH-DRO at 800 mg/kg, in exceedance of the current Utah Initial Screening Level (ISL) of 500 mg/kg. All other reported TPH-DRO and TRPH concentrations were well below their respective Utah ISLs in all other soil samples collected. A table summarizing the reported TPH-DRO and TRPH concentrations is presented as Table 2. The TPH-DRO and TRPH analytical results are presented in Appendix B.

4.3 Volatile Organic Compounds

Based on apparent soil staining during excavation activities, four base and four sidewall soil samples collected during excavation activities were analyzed for volatile organic compounds (VOCs). The soil analytical results were compared to screening levels. As determined in the March 2005 report completed by DERR, the benchmark data from the Superfund Chemical Data Matrix (SCDM) are the accepted benchmark screening values. The analytical results indicate that several VOC constituents were detected in several of the soil samples collected. However, all reported concentrations of the detected VOC constituents are well below the SCDM benchmark screening values. A table summarizing the reported VOC concentrations is presented as Table 3. The VOC analytical results are presented in Appendix C.

4.4 Polychiorinated Biphenyls

Based on apparent soil staining during excavation activities, four base and four sidewall soil samples collected during excavation activities were analyzed for polychlorinated biphenyls (PCBs). The soil analytical results were compared to screening levels. As determined in the March 2005 report completed by DERR, the benchmark data from the Superfund Chemical Data Matrix (SCDM) are the accepted benchmark screening values. The analytical results indicate that Arochlor 1254 was detected in three of the soil samples collected above its method detection limit. However, all reported concentrations were below the SCDM, Reference Dose Screen Concentration of 1,600 ug/kg. A table summarizing the reported PCB concentrations is presented as Table 4. The PCB analytical results are presented in Appendix D.

4.5 TPH Fractionation

As discussed in Section 4.2, analytical results indicated that the soil sample collected from the base of the concrete vault (#3 Base, 12') had a reported concentration of TPH-DRO at 800 mg/kg, in exceedance of the current Utah Initial Screening Level (ISL) of 500 mg/kg. Therefore, pursuant to DERR's request, in order to segregate the carbon ranges of the TPH components into aliphatics and aromatics, TPH fractionation was conducted on soil sample, #3 Base, 12'. Site-specific Industrial/Commercial Cleanup Levels established by DERR personnel for each individual TPH fraction were compared to the analytical results. The analytical results indicate that none of the reported TPH-fraction concentrations exceed the calculated site-specific Industrial/Commercial Cleanup levels. A table summarizing the reported TPH fractionation concentrations and site-specific Industrial/Commercial Cleanup levels is presented as Table 5. The TPH Fractionation analytical results are presented in Appendix E.

5. DERR CONFIRMATION SAMPLING ACTIVITIES

On November 28, 2006, DERR personnel conducted additional soil confirmation sampling activities at the site. Two soil samples (LM-CN-North and LM-CN-South) were collected of the surficial soils from below the asphalt with a GeoProbe using the direct-push method. The soil samples were collected in the appropriate containers with gloved hands and transported on ice by DERR personnel to a Utah-certified laboratory for lead and arsenic analysis using U. S. EPA Method 6010B. DERR soil sample locations are presented on Figure 1.

6. DERR SOIL CONFIRMATION SAMPLE ANALYTICAL RESULTS

The analytical results indicated that arsenic was not detected above 100 mg/kg in either sample collected. However, lead was detected in one of the soil samples collected (LM-CN-South 6") at a concentration of 1,300 mg/kg, in exceedance of its site-specific cleanup level of 800 mg/kg. A table summarizing the DERR confirmation sampling results for lead and arsenic in soil is presented in Table 6. The lead and arsenic analytical results are presented in Appendix F.

Based on the analytical results, Wasatch determined that additional soil removal activities in the area of soil sample LM-CN-South were warranted in order to achieve compliance with the RAP.

7. ADDITIONAL SOIL EXCAVATION ACTIVITIES

Pursuant to conversations with DERR personnel, an area of 5 feet by 5 feet was saw cut in the asphalt at the location of soil sample LM-CN-South. On March 8, 2007, Wasatch supervised the removal of approximately 2 cubic yards of soil from Lake Metals/Pioneer Refining site. The excavation was completed to a depth of approximately 2.5 feet below ground surface. Five composite soil samples were collected by Wasatch personnel from the excavation. One soil sample (#4 BS-1, 2.5') was collected in five aliquots from the bottom of the excavation, each aliquot representing 5 square feet of the excavation. The other four samples (#4 SW-W, #4 SW-S, #4 SW-E, and #4 SW-N) were collected in 5 aliquots each, each sample taken from one sidewall of the excavation. The soil samples were collected in the appropriate containers with gloved hands and transported on ice to a Utah-certified laboratory for lead analysis using U. S. EPA Method 6010B. Pursuant to conversations with DERR personnel, arsenic was not analyzed in these confirmation soil samples as none of concentrations of arsenic in any of the previous confirmation samples collected were above the generic screening criteria of 100 mg/kg.

Additionally, DERR personnel were present on site and collected one confirmation base sample (LM-S-bot) and one confirmation sidewall sample (LM-S-N-Wall) at this time. The soil samples were collected in the appropriate containers with gloved hands and transported on ice by DERR personnel to a Utah-certified laboratory for lead analysis using U. S. EPA Method 6010B. The excavated area and the Wasatch and DERR confirmatory soil sample locations are presented on Figure 1. It should be noted that these sample locations are representations and are not actual locations as numerous aliquots for sample collection were used from the base and sidewalls of this excavated area.

Once the excavation was deemed complete, clean road base from Staker Parsons Companies was spread and compacted in the excavated area and the area was re-surfaced with asphalt.

8. DERR AND WASATCH SOIL CONFIRMATION SAMPLE RESULTS

Upon removal of the additional surficial soils at the site, Wasatch personnel collected 1 base and 4 sidewall confirmation soil samples in the soil excavation area. DERR personnel collected 1 base and 1 sidewall confirmation soil sample in the soil excavation area. The analytical results indicated that none of the confirmation soil samples collected had reported concentrations of lead above the determined generic screening criteria. A table summarizing the reported lead concentrations collected from the soil

confirmation samples from both Wasatch and DERR personnel is presented in Table 6. The lead analytical results are presented in Appendix F.

9. CONCLUSIONS AND RECOMMENDATIONS

Pursuant to activities discussed in Wasatch's April 10, 2006, "Remedial Action Plan", Wasatch supervised the removal of lead and arsenic impacted surficial soils at the Lake Metals/Pioneer Refining site. Analytical results from confirmation soil samples collected from both Wasatch and DERR personnel indicate that the remaining lead and arsenic concentrations in the soils at the site are below the generic screening criteria of 800 mg/kg and 100 mg/kg, respectively. Also, consistent with results from previous investigations conducted by DERR, low levels of petroleum hydrocarbons and PCBs are present in some remaining soils at the site; however, all detected concentrations are below appropriate actions levels. Therefore, based on the analytical results, it is Wasatch's opinion that the soil removal activities have satisfied the requirements of the April 2006 RAP and the Lake Metals/Pioneer Refining facility should receive a Certificate of Completion.

REFERENCES

DERR (Utah Division of Environmental Response and Remediation), 2005, Innovative Site Assessment, Lake Metals Site, Salt lake City, Utah.

Wasatch Environmental, Inc., 2005, Quality Assurance Project Plan Lake Metals/Pioneer Refining Site Salt Lake City, Utah, Project No. 1076-41D.

Wasatch Environmental, Inc., 2006, Site Investigation Results Andrew Avenue Parcel Salt Lake City, Utah, Project No. 1076-41D.

Wasatch Environmental, Inc., 2006, Remedial Action Plan Lake Metals/Pioneer Refining Salt Lake City, Utah, Project No. 1076-41E.

Wasatch Environmental, Inc., 2005, Environmental Assessment Lake Metals/Pioneer Refining Site 1520 Pioneer Road Salt Lake City, Utah, Project No. 1076-41C.

Tables

Table 1
Lake Metals
Lead and Arsenic Soil Analytical Results
(mg/kg)

Sample	Date	Depth	Concentrations	tions	Concen	Concentrations	Notes
l.D.	Collected	Collected	Lead		Arsenic		
			mg/kg	Ø	mg/kg	Ö	
BS-1	7/31/2006	"9	09		5.4	n	
BS-2	8/1/2006	.9	87		5.5	2	MS/MSD performed
BS-3	8/2/2006	.9	99		5.6	ח	
BS-3 (Dup)	8/2/2006	.9	130		5.5	n	
BS-4	8/2/2006	.9	200		5.7	n	MS/MSD performed
BS-5	8/2/2006	 9	30		5.6	ח	
BS-5 (Dup)	8/2/2006	"9	53		7.2	P	
BS-6	8/2/2006	.9	110		5.9	ר	
BS-7	8/3/2006	.9	250		5.8	D	
BS-8	8/3/2006	.9	37		5.7)	
BS-9	8/3/2006	.9	89		5.4	ח	
BS-10	8/9/2006	1.5'	47		5.7	2	
BS-11	8/9/2006	1.5'	560		5.7	n	
Exc#1, BS-2'	7/31/2006	2.0'	. 18		5.9	ח	
Exc#1, SW-W	7/31/2006	1.0'	15		5.9	רו	
Exc#1, SW-S	7/31/2006	1.0'	15		5.9	5	
Exc#1, SW-E	7/31/2006	1.0'	23		5.8	n	
Exc#1, SW-N	7/31/2006	1.0'	19		5.6	n	
Exc#2, BS-2'	8/3/2006	1.0.	12	7	5.9	D	
Exc#2, SW-E	8/3/2006	1.0'	37	7	6.2	ח	
Exc#2, SW-N	8/3/2006	1.0'	27	ص	6.2	ח	
Exc#2, SW-W	8/3/2006	1.0'	06	7	9	כן	
Exc#2, SW-S	8/3/2006	1.0'	46	ŗ	5.9	D	
Generic Screening Criteria	iriteria		800	-	100		:

Q = Data Qualifier

U = The analyte was not detected above the laboratory quantitation limit

J = The numerical value is estimated because the Quality Control criteria were not met

TPH-DRO and TRPH Concentrations in Soil Table 2 Lake Metals (mg/kg)

Sample	Date	Depth	Concentrations	rations	Concentrations	rations	Notes
i.D.	Collected	Collected	TPH-DRO		TRPH		
			mg/kg	σ	mg/kg	σ	
Exc#2, BS-2'	8/3/2006	1.0	24	n	180	n	
Exc#2, SW-E	8/3/2006	1.0	210		190		
Exc#2, SW-N	8/3/2006	1.0'	24	Ŋ	180	n	
Exc#2, SW-W	8/3/2006	1.0'	54	n	180	n	
Exc#2, SW-S	8/3/2006	1.0	24	n	180	n	
#3 Base	8/7/2006	12"	008		840		
BS-10	8/9/2006	1.5	23	ກ	170	n	
BS-11	8/9/2006	1.5'	23	n	170	n	
Utah ISL		-	500		1,000		
Tler 1 SL	-	•	5,000		10,000	-	

Bold concentrations exceed Utah Initial Screening Level (ISL)

Q = Data Qualifier

U = The analyte was not detected above the faboratory quantitation timil J = The numerical value is estimated because the Quality Control criteria were not met

Organic Concentrations In Soil Lake Metals Table 3 (ug/kg)

	Soil Pathw	thway	Approx. Depth		F						
	Benchmark	Benchmark	(feet)	1.0	-	1.0		1.0		1.0	
	Values	Values	Sample Location	Exc#2, SW-E	/E	Exc#2, SW-N	N-W	Exc#2, SW-W	W-W	Exc#2, SW-S	W-S
	SCDM (1)	SCDM (2)	Sample Type	Fleid Sample	ole	Fleld Sample	mple	Fleid Sample	nple	Fleld Sample	npie
Analyte	ug/kg	ng/kg		ug/kg	0	ug/kg	Ö	ug/kg	a	ug/kg	Ö
Carbon Disulfide	7,800,000			2.6		2.4	n	2.4	ñ	2.4	n
1,3-Dichlorobenzene				18		2.4	n	2.4	n	2.4	ר
1,4-Dichlorobenzene		27,000		21		2.4	n	2.4	n	2.4	n
1,2-Dichlorobenzene		1		5.1		2.4	n	2.4	n	2.4	n
1,2,4-Trichlorobenzene	780,000	-		78		5.1		4.4		24	

SCDM (1) = Superfund Chemical Data Matrix, 1/2004, Reference Dose Screen Concentration

SCDM (2) = Superfund Chemical Data Matrix, 1/2004, Cancer Risk Screen Concentration

ug/kg = microgram per kilogram

Q = Data Qualifier

U = The analyte was not detected above the laboratory quantitation limit

J = The numerical value is estimated because the Quality Control criteria were not met

			•	,	i i				i		İ
	Soil Pathway	thway	Approx. Depth								
	Benchmark	Benchmark	(feet)	2.0		12.0	0.	1.5		1.5	
	Values	Values	Sample Location	Exc#2, BS-2	S-2	#3 Base	ase	BS-10		BS-11	
	SCDM (1)	SCDM (2)	Sample Type	Field Sample	nple	Field Sample	ample	Field Sample	nple	Field Sample	nple
Analyte	ug/kg	ug/kg		ng/kg	Ö	ug/kg	Ö	ug/kg	O	ug/kg	Ø
Carbon Disulfide	7,800,000		-, -	2.4	n	2.7	n	2.3	n	2.3	þ
1,3-Dichlorobenzene				2.4	Þ	2.7		2.3	ח	2.3	_
1,4-Dichlorobenzene	-	27,000		2.4	D.	2.7	n	2.3	ח	2.3	כן
1,2-Dichlorobenzene				2.4	n	2.7	Ω	2.3	n	2.3	>
1,2,4-Trichlorobenzene	780,000			49		2.7	ח	2.3	n	2.3	Þ

SCDM (1) = Superfund Chemical Data Matrix, 1/2004, Reference Dose Screen Concentration SCDM (2) = Superfund Chemical Data Matrix, 1/2004, Cancer Risk Screen Concentration

ug/kg = microgram per kilogram

Q = Data Qualifier

U = The analyte was not detected above the laboratory quantitation limit

J = The numerical value is estimated because the Quality Control criteria were not met

PCB Concentrations in Soil Lake Metals Table 4 (ng/kg)

Soll Pat	hway	Approx. Depth								
Benchmark	Benchmark	(feet)	1.0		7.	_	1.0		1.0	
Values	Values	Sample Location	Exc#2. SW	J-/	Exc#2.	SWN	Exc#2, SI	W-W	Exc#2, S\	V-S
SCDM (1)	SCDM (2)	Sample Type	Field Sam	ole	Field S	ample	Field San	ple	Field San	ple
ug/kg	ng/kg		ng/kg	ø	ug/kg	Ö	ug/kg	O	ug/kg	σ
1,600	320		30	h	8	P	œ	n	30	ņ
1,600	320		30	n	30	n	30	D	30	O
1,600	320		œ	า	30	n	0E	n	30	ח
1,600	320		30	ņ	30	n	30	n	0E	ח
1,600	320		œ	n	30	n	30	n	0E	O
1,600	320		400	٦	46	٦	30	U	1,200	٦
1,600	320		30)	30	Ò	30	U	30	יכ
Jata Matrix, 1/200	1, Reference Do.	se Screen Concentration	vo							
	Soul Pal Benchmark Values SCDM (1) ug/kg 1,600 1,600 1,600 1,600 1,600 1,600 1,600	Soil Pathway Benchmark Benchmark Values Values SCDM (1) Ug/kg 1,600 320 1,600 320 1,600 320 1,600 320 1,600 320 1,600 320 1,600 320 1,600 320 1,600 320 1,600 320 1,600 320	Soli Pannway Approx. Deprin Soli Pannway Approx. Deprin ScDM (1) ScDM (2) Sample Location ScDM (1) ScDM (2) Sample Type ug/kg 1,600 320 1,600 1,60	enchmark (feet) Values Sample Location SCDM (2) Sample Type ug/kg 320 320 320 320 320 320 320 320 320	80 30 30 30 30 30 30 30 30 30 30 30 30 30	1.0 Exc#2. SW-E Field Sample ug/kg	1.0 Exc#2. SW-E Field Sample ug/kg \Q	1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	1.0 1.0 Exc#2. SW-E Exc#2. SW-N Exc# Field Sample Graph State Graph	1.0 1.0 1.0 Exc#2. SW-E Exc#2. SW-W Exc#2. SW-W Exc#2. SW-W Field Sample Field Sample Field Sample Field Sample Field Sample Field Sample Field Sample Field Sample 300 U 300 U 300 U 30 30 U 30 U 30 U 30 30 U 30 U 30 U 30 400 J 46 J 30 U 30 400 J 46 J 30 U 30 30 U 30 U 30 U 30 30 U 30 U 30 U 30

SCDM (2) = Superfund Chemical Data Metrix, 1/2004, Cancer Risk Screen Concentration

ug/kg = microgram per kilogram

Q = Data Qualifler

U = The analyte was not detected above the laboratory quantitation limit

J = The numerical value is estimated because the Quality Control criteria were not met Concentrations in Bold exceed SCDM Cancer Risk

					2						
	Soll Pathway	thway	Approx. Depth								
	Benchmark	Benchmark	(feat)	2.0	_	12.0	0	1.5		1.5	
	Values	Values	Sample Location	Exc#2, BS-2	.5.	#3 Base	856	BS-10	0	BS-11	
	SCDM (1)	SCDM (2)	Sample Type	Field Sample	le	Field Sample	ample	Fteld Sample	mple	Field Sample	ple
Analyte	ug/kg	ug/kg		пд/кр	0	ug/kg	σ	ug/kg	0	ug/kg	٥
Aroclor 1016	1,600	320		30	b	8	b	29	n	29	n
Aroclor 1221	1,600	320		30	D	स्र	כ	29	D	29	þ
Aroclor 1232	1,600	320		30	2	ਲ	2	82	ח	29	n
Arodor 1242	1,600	320		30	þ	ਲ	Þ	82	Þ	29	þ
Arodor 1248	1,600	320		30	n	8	n	29	-	29	n
Arodor 1254	1,600	320		30	b	ਲ)	59	D	29	ך
Aroclar 1260	1,600	320		30	D	₹	Þ	29	P	58)

SCDM (1) = Superfund Chemical Data Matrix, 1/2004, Reference Dose Screen Concentration SCDM (2) = Superfund Chemical Data Matrix, 1/2004, Cancer Risk Screen Concentration

ug/kg = microgram per kilogram

Q = Data Qualifier

U = The analyte was not detected above the laboratory quantitation limit

J = The numerical value is estimated because the Quality Control criteria were not met Concentrations in Bold exceed SCOM Cancer Risk

Table 5 Lake Metals TPH Fractionation Analyses in Soil (mg/kg)

	Site Specific	Date	Sample I.D.	
	Industrial/Commercial	Collected	#3 Base 12'	
	Cleanup Level			
Analyte	(mg/kg)		mg/kg	Q
Benzene	52°	8/7/2006	0.0037	
Toluene	204,000*	8/7/2006	0.021	
Ethylbenzene	102,000*	8/7/2006	0.0068	U
Total Xylenes	204,000*		0.013	
Naphthalene	20,400*	8/7/2006	0.014	U
MTBE	5,110*	8/7/2006	0.0068	Ų
C9-C10 (aromatics)	40,900*	8/7/2006	1.0	
C11-C13 (aromatics)	4,090*	8/7/2006	0.850	
C12-C22 (aromatics)	30,700*	8/7/2006	0.270	0
Acenaphthalene	30,700*	8/7/2006	0.270	U
Acenapthene	61,300*	8/7/2006	0.270	U
Fluorene	40,900*	8/7/2006	0.270	U
Phenanthracene	30,700*	8/7/2006	0.270	U
Anthracene	307,000*	8/7/2006	0.270	U
Fluoranthene	40,900*	8/7/2006	0.270	U
Pyrene	30,700*	8/7/2006	0.270	U
Benz(a) Anthracene	3.92*	8/7/2006	0.340	U
Chrysene	392*	8/7/2006	0.270	U
Benzo (b) Fluoranthene	3.92*	8/7/2006	0.340	U
Benzo (k) Fluoranthene	39.2*	8/7/2006	0.340	Ü
Benzo (a) Pyrene	0.392*	8/7/2006	0.340	U
Indeno (1,2,3-cd) Pyrene	3.92*	8/7/2006	0.340	U
Dibenzo (a,h) Anthracene	0.392*	8/7/2006	0.340	U
Benzo (g,h,i) Perylene	30,700*	8/7/2006	0.340	U
C4-C8 (aliphatics)	61,300*	8/7/2006	0.068	U
C9-C16 (aliphatics)	102,000*	8/7/2006	6.425	
C17-C35 (aliphatics)	>soluability*	8/7/2006	154.0	

^{* =} Site Specific Cleanup Level calculated by Utah DERR personnel

Q = Data Qualifier

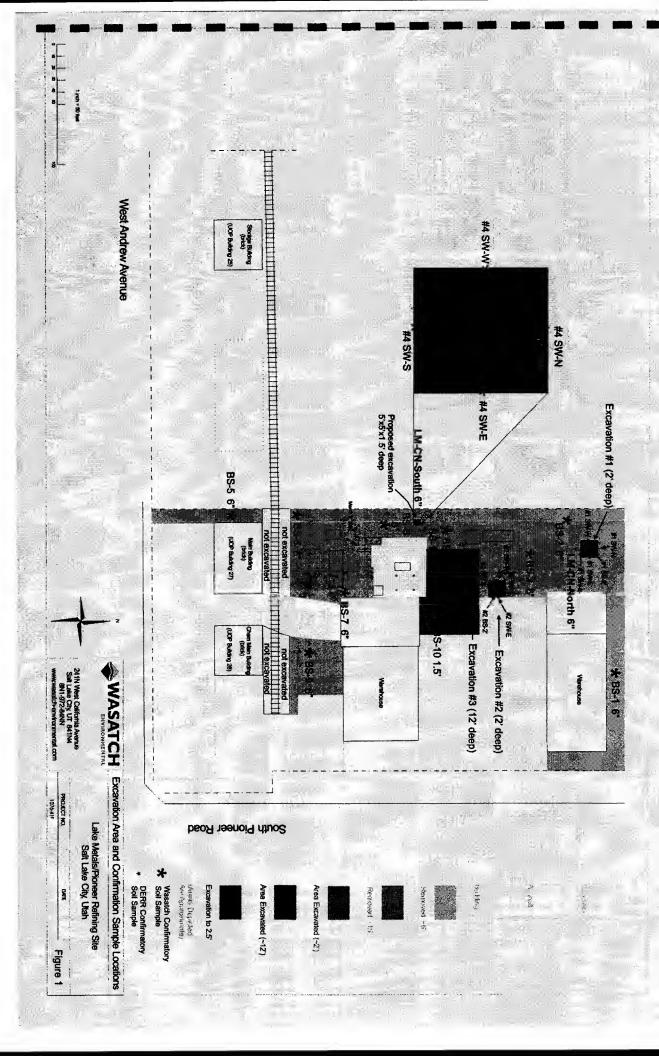
U = The analyte was not detected above the laboratory quantitation limit

J = The numerical value is estimated because the Quality Control criteria were not met

Table 6 Lake Metals Confirmation Sampling Conducted by Utah DERR and Wasatch Lead and Arsenic Soil Results (mg/kg)

Sample	Date	Depth	Collected	Concer	ntrations
i.D.	Collected	Collected	Ву	Lead	Arsenic
			**	mg/kg	mg/kg
M-CN-North	11/28/2006	6" · · · · ·	Utah DERR	· 270-	12
M-CN-South	11/28/2006	6"	Utah DERR	1,300	33
LM-S-Bot	3/8/2007	2.5'	Utah DERR	44	NA
LM-S-N-Wall	3/8/2007	various	Utah DERR	57	NA
Exc #4 BS-1	3/8/2007	2.5'	Wasatch	51	NA
Exc #4 SW-N	3/8/2007	various	Wasatch	38	NA
Exc #4 SW-S	3/8/2007	various	Wasatch	59	NA
Exc #4 SW-E	3/8/2007	various	Wasatch	80	NA
Exc #4 SW-W	3/8/2007	various	Wasatch	52	. NA
Generic Screenin	o Criteria			800	100

Bold concentrations exceed Generic Screening Criteria



Appendix A

Lead and Arsenic Analytical Results



AMERICAN WEST ANALYTICAL

LABORATORIES

November 10, 2006

Rebecca Studenka Wasatch Environmental 2410 West California Avenue Salt Lake City, UT 84104

TEL: (801) 972-8400 FAX: (801) 972-8459

463 West 3600 South Salt Lake City, Utah 84115

RE: Lake Metals / 1076-41F

Dear Rebecca Studenka:

Lab Set ID: L73132

(801) 263-8686 Foll Free (888) 263-8686

Fax (801) 263-8686 Fax (801) 263-8687 mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

American West Analytical Labs received 6 samples on 7/31/2006 for the analyses presented in the following report.

All analyses were performed in accordance to National Environmental Laboratory Accreditation Program (NELAP) protocols unless noted otherwise. If you have any questions or concerns regarding this report please feel free to call.

Second revision. Pages 1 and 23, 24, 28 and 37 have been revised. MS/MDS revisions made.

Thank you.

Peggy McNicol QA Officer

Approved by

Laboratory Director or designee

Report Date: 11/10/2006 Page 1 of 37

All analysis applicable to the CWA, SDWA and RCRA are performed in accordance to NELAC protocole. Pertinent sampling information is located on the attrached Chain-of-Custody. This report is provided for the exclusive use of the addresses. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addresses will be granted only on contact. This company accepts no responsibility except for the due performance of inspection analysis in next faith and according to the trade and according to



Client

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

Lab Sample ID: L73132-01B

AMERICAN WEST Field Sample ID: #1 BS-2'

ANALYTICAL

Collected: 7/31/2006 9:15:00 AM

LABORATORIES

Received: 7/31/2006

TO	TAL	META	LS

TOTAL METALS		Date	Method	Reporting	Analytical	
Analytical Results	Units	Analyzed	Used	Limit	Results	
Arsenic	mg/kg-dry	7/31/2006 10:57:33 PM	6010B	5.9	< 5.9	
Lead	mg/kg-dry	7/31/2006 10:57:33 PM	6010B	5.9	18	

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 Il Free (888) 263-8686 Fax (801) 263-8687 ⊵mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Peggy McNicol QA Officer

> > > Report Date: 11/10/2006 Page 2 of 37



Client

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73132-02B

Units

mg/kg-dry

mg/kg-dry

WEST

Field Sample ID: #1 SW-W

ANALYTICAL

Collected: 7/31/2006 9:30:00 AM

LABORATORIES

Received: 7/31/2006

463 West 3600 South	
Salt Lake City, Utah	

84115

TOTAL METALS Analytical Results

Date Method Used Analyzed

6010B

Reporting Analytical Limit Results

Arsenic Lead

7/31/2006 11:01:07 PM 7/31/2006 11:01:07 PM

5.9 6010B 5.9 < 5.9 15

(801) 263-8686 oll Free (888) 263-8686

Fax (801) 263-8687 ail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Peggy McNicol QA Officer

> > > Report Date: 11/10/2006 Page 3 of 37



Client:

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73132-03B

WEST

Field Sample ID: #1 SW-S

ANALYTICAL

Collected: 7/31/2006 9:40:00 AM

LABORATORIES

Received: 7/31/2006

TOTAL	METALS
-------	--------

TOTAL METALS		Date	Method	Reporting	Analytical	
Analytical Results	Units	Analyzed	Used	Limit	Results	
Arsenic	mg/kg-dry	7/31/2006 11:04:42 PM	6010B	5.9	< 5.9	
Lead	mg/kg-dry	7/31/2006 11:04:42 PM	6010B	5.9	15	

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> Kyle F. Gross Laboratory Director

> > Peggy McNicol QA Officer

> > > Report Date: 11/10/2006 Page 4 of 37



Client:

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73132-04B

WEST

Field Sample ID: #1 SW-E

ANALYTICAL

Collected: 7/31/2006 9:45:00 AM

LABORATORIES

Received: 7/31/2006

463 West 3600 South Salt Lake City, Utah

84115

TOTAL METALS		Date	Method	Reporting	Analytical Results	
Analytical Results	Units	Analyzed	Used			
Arsenic	mg/kg-dry	7/31/2006 11:08:17 PM	6010B	5.8	< 5.8	
Lead	mg/kg-dry	7/31/2006 11:08:17 PM	6010B	5.8	23	

(801) 263-8686 il Free (888) 263-8686 Fax (801) 263-8687 ail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Peggy McNicol QA Officer

> > > Report Date: 11/10/2006 Page 5 of 37

All analysis applicable to the CWA, SDWA and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached Chain-of-Custody. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Client

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73132-05B

WEST

Field Sample ID: #1 SW-N

ANALYTICAL

Collected: 7/31/2006 9:50:00 AM

LABORATORIES

Received: 7/31/2006

ıth	

TOTAL METALS Analytical Reporting Method Date Results Limit Used Analyzed Units **Analytical Results** < 5.6 6010B 7/31/2006 11:23:46 PM 5.6 mg/kg-dry Arsenic 19 6010B mg/kg-dry 7/31/2006 11:23:46 PM 5.6 Lead

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> Kyle F. Gross Laboratory Director

> > Peggy McNicol QA Officer

> > > Report Date: 11/10/2006 Page 6 of 37

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SITE LOCATION: La	Le Meta SCCu	ks			₹	¥	C	8 9		
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D-Chilled		O Yes O No O N/A	DAWAL Supplied VOA/TOC/TOX Vials	
Temperature C °C		Present on Sample	☐ Amber ☐ Clear ☐ Headspace ☐ No Headspace	
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O&G pH<2 HCL				
Phenols pH <2 H ₂ SO ₄				
Sulfide pH > 9NaOH, ZnAC				
TKN pH <2 H ₂ SO ₄				
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	מופת שו הוופווו ופלהפפר			

AMERICAN WEST ANALYTICAL LABORATORIES

463 West 3600 South

Salt Lake City, Utah 84115 (801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

Wasatch Environmental CLIENT:

L73132 Work Order: Lake Metals / 1076-41F Project:

Dept: ME

SampType: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Ounliffers	Analysis Date
I.CS-29823	Arsenic	mg/kg	6010B	19.49	20	0	97.4	75-125				131/2006
LCS-29823	Lead	mg/kg	6010B	19.35	20	0	1.96	75-125				/31/2006
LCS-29826	Arsenic	mg/L	6010B	0.4153	4.0	0	104	75-125				8/1/2006
LCS-29826	Lead	mg/L	6010B	0.4070	0.4	0	102	75-125				8/1/2006

Report Date: 11/10/2006 Page 21 of 37



Salt Lake City, Utah 84115 (801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 c-mail: awal@awal-labs.com, web: www.awal-labs.com 463 West 3600 South

Kyle F. Gross Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

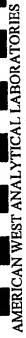
Wasatch Environmental L73132 Work Order: CLIENT:

Dept: ME

SampType: MBLK Lake Metals / 1076-41F

Project:	Lake Metals / 1076-41F	6-41F									
01.41.00	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit Ourliffers	Analysis Date
Sample ID	Allanyio										701006
WB.29823	Arsenje	mg/kg	6010B	< 5.0							2004/16/1
MB 20823	pag I	mp/kg	6010B	< 5.0				•			2000,11611
70807 GM	Arsenic	Dou'L	6010B	< 0.10				•			8/1/2000
02852-CIM	pad I	me/L	6010B	< 0.10				•			0007/1/8
MD-25640 Lucau	Of. Arsenic	ma/L	6010B	< 0.10				•			9007/1/8
MB-TCI P-29820- Lead	20- Lead	ng/L	6010B	< 0.10				•			8/1/2000
MB-TCLP-29820- Arsenic	20- Arsenic	mg/L	6010B	< 0.10				•			0007/1/8
MR-TCI.P-29820- Lead	20- Lead	mg/L	6010B	< 0.10							00177170

All analyses applicable to the CMA, SDMA, and RCRA are performed in accordance to NELAC protocols. Particiset sampling information is boated on the attached COC. This report is provided for the accidence use of the convergence of subsequence to NELAC protocols, or supported in an information of this report for any purpose other than for the addresses will be granted only on confact. This convergence to support to the due protocols or protocols and the republication of this report for any purpose other than for the addresses will be granted only on confact. This convergence is approximately that the publication of this report for any purpose of the protocol or protocols.



463 West 3600 South

Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

Wasatch Environmental L73132 Work Order: CLIENT:

Lake Metals / 1076-41F

Project:

Dept: ME

SampType: MS

Sample ID Analyte Units Mediod L73132-05BMS Arsenlo mg/kg-dry 6010B L73132-05BMS Lead mg/kg-dry 6010B L73102-05BMS Arsenic mg/kg-dry 6010B			Amount	Original						Analysis
mg/kg-dry mg/kg-dry mg/L	Units	od Result	Spiked	Amount	%REC	Limits	%RPD	RPD Limit On	Onaliffears	Date
mg/kg-dry (mg/kg-dry (mg/kg)))))))))); (mg/kg-mg/				100	. 50	301.35			`	A00001 PA
mo/L mo/L	mo/ke-drv		22.58	1.637	97.1	C71-C/		•		007/10/
Lead ing/kg-dry (Arsenic mo/L				1	5	361 35		•	· <	721D00A
Argenic mo/L	y vip-ay/out		22.38	19.70	20.7	C71-C/		•		2000
Argenic mo/L			3	<	120	75-125				8/1/2006
	7,8m		ŧ.	>	241					/004.70
Land moff.	, 1110/J.	B 0.3976	4.0	0	4.66	75-125				8/1/2000

A Reissuc of a previously generated report. Information has been revised, an incorrect duplicate entry for As and Pb have been removed. Information herein supersedes that of previously issued reports.

Report Date: 11/10/2006 Page 23 of 37

backs to the CMA SDWA and RCRA are performed in accordance to NELAC protects. Purliment sampling information is located on the standard on the standard is provided for the acclusive use of the addresses. Privileges of authors are thin correction or thin to re-publication of this report for any purpose other than for the addresses will be granted only on contect. This company accepts no responsibility succept for the due performance of inspection sander analysis in good faith as not the content of the due performance of inspection sander analysis in good faith.

Spike recovery indicates matrix interference. The method is in control as indicated by the laboratory control sample (LCS).



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463 West 3600 South

Saft Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

CLIENT: Wasatch Environmental

Work Order: L73132

Project: Lake Metals / 1076-41F

Dept: MB

SampType: MSD

Sample 1D	Anslufa	7714	Modera		Amount	Original	1					Analysis
and and	of min	CIIICS	DOMENI	Kesuit	pande	Autount	*KEC	Limits	%RPD	RPD Limit	Onalifiera	Date
L73132-05BMSD Arsenic	Arsenic	mg/kg-dry	6010B	24.31	22.06	1.637	103	75-125	30 %	5	•	7000142
Last Applican cetter I	1			!			}	7	20.0	3	:	0007/15//
USMBC0-7616/7	Lead	mg/kg-dry	6010B	37.71	22.06	19.26	83.6	75-125	4.13	00	<	7/21/2004
L73085-02AMSD Arsenic	Arsenic	. Nort	K0108	0 4603	•	•			: :	3		0007/15/
CONTRACT SOUTH			Coro	0.4363	*	>	2	75-125	4.36	ຊ		8/1/2006
L/3063-UZAMSIJ LEBO	Lena	mg/L	6010B	0.3909	4.0	0	27.7	75-125	1.71	70		8/1/2006

[^] Reissue of a previously generated report. Information has been revised, an incorrect duplicate entry for As and Pb have been removed. Information herein supersedes that of previously issued reports.

Spike recovery indicales matrix interference. The method is in control as indicated by the laboratory control sample (LCS).



November 10, 2006

AMERICAN WEST ANALYTICAL LABORATORIES

Rebecca Studenka Wasatch Environmental 2410 West California Avenue Salt Lake City, UT 84104

TEL: (801) 972-8400 FAX: (801) 972-8459

463 West 3600 South Salt Lake City, Utah 84115

RE: Lake Metals / 1076-41F

Dear Rebecca Studenka:

Lab Set ID: L73140

(801) 263-8686 bil Free (888) 263-8686 Fax (801) 263-8687 pail: awal@awal-labs.com American West Analytical Labs received 1 sample on 7/31/2006 for the analyses presented in the following report.

Kyle F. Gross Laboratory Director All analyses were performed in accordance to National Environmental Laboratory Accreditation Program (NELAP) protocols unless noted otherwise. If you have any questions or concerns regarding this report please feel free to call.

Second revision. Pages 1 and 5-6 have been revised. Error was corrected on MS/MSD pages.

Thank you.

Peggy McNicol QA Officer

Approved by:

Laboratory Director or designee

Report Date: 11/10/2006 Page 1 of 6

All analysis applicable to the CWA, SDWA and RCRA are performed in accordance to NELAC protocols. Pertinent sampling information is located on the attached Chain-of-Custody. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the re-publication of this report for any purpose other than for the addressee will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



Client

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73140-01A

WEST

Field Sample ID: BS-1 6"

ANALYTICAL LABORATORIES

Collected: 7/31/2006 3:15:00 PM

Units

mg/kg-dry

mg/kg-dry

Received: 7/31/2006

TOTAL METALS **Analytical Results**

Arsenic

Lead

Analytical Reporting Method

60

5.4

463 West 3600 South

Salt Lake City, Utah

Date Results Limit Used Analyzed < 5.4 8/1/2006 11:24:40 AM 6010B 5.4

6010B

8/1/2006 11:24:40 AM

(801) 263-8686 Il Free (888) 263-8686 Fax (801) 263-8687 ail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Peggy McNicol QA Officer

> > > Report Date: 11/10/2006 Page 2 of 6



AMERICAN WEST ANALYTICAL LABORATORIES

463 West 3600 South Salt Lake City, Utah 84115

(801) 263-8686, Toll Free (888) 263-8686, Fax (801) 263-8687 e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gross Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

Wasatch Environmental CLIENT:

L73140 Work Order:

Lake Metals / 1076-41F Project:

Dept: ME

SampType: LCS

Analysis Date	7/31/2006	7717006
RPD Limit Ounlissers		
RPD Limit		
%RPD		
Limits	75-125	75.125
%REC	97.4	7 90
Original Amount	0	_
Amount Spiked	20	20
Result	19.49	10 35
Method	6010B	KOLOR
Units	mg/kg	mo/ko
Analyte	Arsenic	Lead
Sample ID	LCS-29823	LCS-29823

Report Date: 11/10/2006 Page 3 of 6



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Kyle F. Gross Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

Wasatch Environmental CLIENT:

L73140 Work Order:

Lake Metals / 1076-41F Project:

Dept: MB

SampType: MBLK

					Amount	Original					Analysis
Sample 1D	Analyte	Units	Method	Result	Spiked	Amount	%REC	Limits	%RPD	RPD Limit Onalifiers	Date
MB-29823	Amenic	mg/kg	6010B	< 5.0							7/31/2006
MB-29823	Lead	mg/kg	6010B	< 5.0							7/31/2006



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Kyle F. Cross
Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

CLIENT: Wasatch Environmental Work Order: L73140

Project: Lake Metals / 1076-41F

Dept: ME

SampType: MS

7/31/2006 7/31/2006 Analysis Date %RPD RPD Limit Onelifiers **Limits** 75-125 75-125 %REC Amount 19.26 1.637 Amount Spiked 22.58 22.58 23.57 39.29 Method mg/kg-dry 6010B mg/kg-dry 6010B Units Analyte Arsenic Lead L73132-05BMS L73132-05BMS Sample ID

A Reissue of a previously generated report. Information has been revised, an incorrect duplicate entry for As and Pb have been removed. Information herein supersedes that of previously issued reports.



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Kyle F. Gross Laboratory Director

Peggy McNicol QA Officer

QC SUMMARY REPORT

Wasatch Environmental CLIENT:

L73140 Work Order: Lake Metals / 1076-41F Project:

Dept: ME

SampType: MSU

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Onalifiers	Analysis Date
L73132-05BMSD Arsenic	Arsenic	mg/kg-dry	6010B	24.31	22.06	1.637	103	75-125	3.08	20	<	771,0006
L73132-05BMSD Lead	Lead	mg/kg-dry	6010B	37.71	22.06	19.26	83.6	75-125	4.13	, 8 ,	<	7/31/2006

[^] Reissue of a previously generated report. Information has been revised, an incorrect duplicate entry for As and Pb have been removed. Information herein supersedes that of previously issued reports.

CHAIN OF CUSTODY FORM

					LAB	# : 731	40
PROJECT NUMBER:	776-41F						
SAMPLER: RSAUD	enka				1	ANALY: REQUES	
PROJECT NUMBER: (CERTIFICATION #: CERTIFICATION:	3#128	5					
SITE LOCATION:	lale.				2		
	netal	•			1		
					25		
SAMPLE	Date	Time	Media	Amount	12 2		
BS-164	7/31/06	1505	501	2,403	~		
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Ý							
				-			
SPECIAL INSTRUCTION	S:						
7 24	th TAI	A					
	Rebeec	e 54	Tulie	Klane			
Relinquished By:	Date/Time		Received			Date/Tim	
Rebucca Tuderly		1602	- la	1/1	/	7/31/06	1602
7	1-1-0-/	10 1	- CARha	17-4-9		/21/0 4	1000

Page _



AMERICAN WEST ANALYTICAL LABORATORIES

63 West 3600 South

Salt Lake City, Utah

84115

August 02, 2006

Rebecca Studenka Wasatch Environmental 2410 West California Avenue Salt Lake City, UT 84104

TEL: (801) 972-8400 FAX: (801) 972-8459

RE: Lake Metals / 1076-41F

Dear Rebecca Studenka:

Lab Set ID: L73167

American West Analytical Labs received 1 sample on 8/1/2006 for the analyses presented in the following report.

All analyses were performed in accordance to National Environmental Laboratory Accreditation Program (NELAP) protocols unless noted otherwise. If you have any questions or concerns regarding this report please feel free to call.

Thank you.

(801) 263-8686 Free (888) 263-8686 Fax (801) 263-8687 mail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Peggy McNicol OA Officer

> > > Approved by:

Laboratory Director or designee

Report Date: 8/2/2006 Page 1 of 6





Client:

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73167-01A

WEST ANALYTICAL **ABORATORIES** Field Sample ID: BS-2 6"

Collected: 8/1/2006 2:30:00 PM

Received: 8/1/2006

TOTAL METALS		Date	Method	Reporting	Analytical	
Analytical Results	Units	Analyzed	Used	Limit	Results	
Arsenic	mg/kg-dry	8/1/2006 6:09:22 PM	6010B	5.5	< 5.5	
Lead	mg/kg-dry	8/1/2006 6:09:22 PM	6010B	5.5	87	1

Spike recovery indicates matrix interference. The method is in control as indicated by the laboratory control sample (LCS).

West 3600 South Salt Lake City, Utah 84115

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> Kyle F. Gross aboratory Director

> > Peggy McNicol **QA** Officer

> > > Report Date: 8/2/2006 Page 2 of 6



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Kyle F. Gross
Lucantory

Peggy McNicol QA Officer

QC SUMMARY REPORT

Wasatch Environmental Work Order: CLIENT:

Lake Metals / 1076-41F Project:

Arsenic Lead

LCS-29846

LCS-29846

Dept: ME

SampType: LCS Original Amount Spiked Result Method Units Analyte Sample ID

8/1/2006 8/1/2006 75-125 75-125 0 0 2 2 21.27 21.17 6010B 6010B mg/kg mg/kg

Analysis

Date

%RPD RPD Limit Onalifiers

Limits

%REC

Amount



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Peggy McNicol QA Officer

Kyle F. Gross Laboratory Director

QC SUMMARY REPORT

Wasatch Environmental L73167 Work Order: CLIENT:

Lake Metals / 1076-41F Project:

Dept: ME

SampType: MBLK

8/1/2006 Analysis Date %RPD RPD Limit Oualifiers Limits %REC Amount Origina₁ Amount Spiked Result < 5.0 < 5.0 Method 6010B 6010B mg/kg mg/kg Units Analyte Arsenic Lead MB-29846 MB-29846 Sample ID

8/1/2006

Report Date: 8/2/2006 Page 4 of 6



AMERICAN WEST ANALYTICAL LABORATORIFS 403 West 3000 South

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Peggy McNicol QA Officer

QC SUMMARY REPORT

Wasatch Environmental L73167 Work Order: CLIENT:

Lake Metals / 1076-41F

Project:

Dept: ME

SampType: MSD

Analysis Date	8/1/2006
Oualifiers	-
RPD Limit	50 20
%RPD	3.12
Limits	75-125 75-125
%REC	98.7 -77.0
Original Amount	0.9159 86.69
Amount Spiked	21.38
Result	22.01 70.24
Method	6010B 6010B
Units	mg/kg-dry mg/kg-dry
nple ID Analytc	8167-01AMSD Arsenic 1167-01AMSD Lead
Sample ID Analyte	L73167-01AMSD Arsenic L73167-01AMSD Lead

¹ Spike recovery indicates matrix interference. The method is in control as indicated by the laboratory control sample (LCS).



Salt Lake City, Utah 84115

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Peggy McNicol QA Officer Kyle F. Gross

QC SUMMARY REPORT

Wasatch Environmental L73167 Work Order: CLIENT:

Dept: ME

Lake Metals / 1076-41F Project:

SampType: MS

	•				Amount	Original						
Sample ID	Analyle	Units	Method	Result	Spiked	Amount	%REC	Limits	%RPD	RPD Limit	Ousliffers	Analysis
1 72167 01 A 14G												Dak
CMPIO-/OIC/T	Arsenic	mg/kg-dry	60t0B	21 33	21 82	0 0 1 60	7 70	301 36				
LAST ONALATOR I SEA	1,000	· ·			10.11	67177	27.0	C71-C/				8/1/2006
CIMPIO-/OIC/A	רבמת	mg/kg-dry	6010B	71.25	21.83	07 78	200	301 34				
		,			1.04	60.00	0.0/-	671-67			-	2/1/2/1/2 2/1/2/1/2

^{&#}x27; Spike recovery indicates matrix interference. The method is in control as indicated by the laboratory control sample (LCS).

Report Date: 8/2/2006 Page 5 of 6

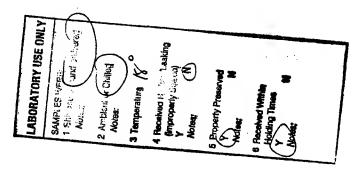
American West Analytical Labs

Simon to cleart \$12106

WORK ORDER Summary

01-Aug-06

			9	9	9
L73167	Storono	2101 agic	aug 1 metals	aug 1 metals	aug i metais
Work Order L73167	Test Code		3051A-ICPMS	ICP-S	PMOIST
	Matrix		Soil		
	Date Due	700440	9/7/7000	8/2/2006	8/2/2006
QC Level: QC 2+ Location:	Date Received	8/1/2006	0007/10		
:4: QC 2+	Collection Date	8/1/2006 2:30:00 PM			
WASS80 Lake Metals / 1076-41F Next Day Rush; QCLevel: QC 2+	Client Sample ID	BS-2 6"			
Client ID: Project: Comments:	Sample ID	L73167-01A			



CHAIN OF CUSTODY FORM

					LA	B#:	7	3/6	7	·
PROJECT NUMBER: 10	16-41F		-		ł	•				
CARROLED. V//	A				7 4	WALY	'SES I	REQU	JEST	ED
CERTIFICATION #: 6-9-2	# 1295		•			T				П
SITE LOCATION: LO	he Metal	SA.			2ºV	9				
CERTIFICATION #: 632	SCC. UT	-		Ì	2	3				
					70ta	1	}			
SAMPLE DESCRIPTION	Date	Time	Media	Amount	10			-		
BS-2 6"	8/1/06	1430	50/1	6 402 Jans	2					
MSINOD										
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SPECIAL INSTRUCTIONS: .	* Run	MS/	MBDZ	¥					• • •	
	4 241	WTA	一大下			•				
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Relinquished By:	Date/Time		Received B	y: /		Date,	/Time			
Labera Frederika	8/1/06/	451	Edm	Hay.	1	8/1/	16	/4	51	
	. ,				T	7				



AMERICAN WEST ANALYTICAL ABORATORIES

3 West 3600 South alt Lake City, Utah

84115

August 03, 2006

Rebecca Studenka Wasatch Environmental 2410 West California Avenue Salt Lake City, UT 84104

TEL: (801) 972-8400 FAX: (801) 972-8459

RE: Lake Metals / 1076-41F

Dear Rebecca Studenka:

Lab Set ID: L73179

(801) 263-8686 of ree (888) 263-8686 Fax (801) 263-8687 nail: awal@awal-labs.com

> Kyle F. Gross Laboratory Director

> > Peggy McNicol QA Officer

American West Analytical Labs received 3 samples on 8/2/2006 for the analyses presented in the following report.

All analyses were performed in accordance to National Environmental Laboratory Accreditation Program (NELAP) protocols unless noted otherwise. If you have any questions or concerns regarding this report please feel free to call.

Thank you.

Approved by

Laboratory Director or designee

Report Date: 8/3/2006 Page 1 of 8





Client

Wasatch Environmental

Units

8/2/2006 8:39:41 PM

6010B

mg/kg-dry

mg/kg-dry

Contact: Rebecca Studenka

66

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73179-01A

WEST

Field Sample ID: BS-3 @ 6"

ANALYTICAL **ABORATORIES**

Collected: 8/2/2006 9:20:00 AM

Arsenic

Lead

Received: 8/2/2006

TOTAL METALS **Analytical Results**

Reporting Analytical Date Method Limit Results Analyzed Used 8/2/2006 8:39:41 PM 6010B 5.6 < 5.6

5.6

West 3600 South Salt Lake City, Utah 84115

(801) 263-8686 ree (888) 263-8686 Fax (801) 263-8687 nail: awal@awal-labs.com

> Kyle F. Gross aboratory Director

> > Peggy McNicol QA Officer

> > > Report Date: 8/3/2006 Page 2 of 8



INORGANIC ANALYSIS REPORT

Client:

Wasatch Environmental

Contact: Rebecca Studenka

Project ID: Lake Metals / 1076-41F

AMERICAN

Lab Sample ID: L73179-02A

WEST ANALYTICAL LABORATORIES Field Sample ID: BS-3 @ 6" Dup

Collected: 8/2/2006 9:20:00 AM

Received: 8/2/2006

TOTAL METALS

Date Reporting Analytical Method **Analytical Results** Limit Units Results Analyzed Used Arsenic 8/2/2006 8:43:44 PM mg/kg-dry 6010B 5.5 < 5.5 Lead mg/kg-dry 8/2/2006 8:43:44 PM 6010B 5.5 130

63 West 3600 South Salt Lake City, Utah 84115

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> Kyle F. Gross aboratory Director

> > Peggy McNicol **QA** Officer

> > > Report Date: 8/3/2006 Page 3 of 8





Client

Wasatch Environmental

Contact: Rebecca Studenka

AMERICAN WEST ANALYTICAL BORATORIES Lab Sample ID: L73179-03A

Project ID: Lake Metals / 1076-41F

Field Sample ID: BS-4 @ 6" (MS/MSD)

Collected: 8/2/2006 9:35:00 AM

Received: 8/2/2006

TOTAL METALS		Date	Method	Reporting	Anabetasi	1	
Analytical Results	Units	Analyzed	Used	Limit	Analytical Results	l.	
Arsenic	mg/kg-dry	8/2/2006 8:51:43 PM	6010B	5.7	< 5.7		
Lead	mg/kg-dry	8/2/2006 8:51:43 PM	6010B	5.7.	200	2	
2 4 7							

² Analyte concentration is too high for accurate spike recovery.

3 West 3600 South alt Lake City, Utah

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> Kyle F. Gross boratory Director

Peggy McNicol **QA** Officer

Report Date: 8/3/2006 Page 4 of 8



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Kyle F. Gross
Literatory

Peggy McNicol QA Officer

QC SUMMARY REPORT

CLIENT: Wasatch Environmental Work Order: L73179

Project: Lake Metals / 1076-41F

Dept: ME

SampType: LCS

Orange ID	**************************************	:			Amount	Original						Analysis
Sample 1D	Analyte	Units	Method	Result	Spiked	Amount	%REC	Limits	%RPD	RPD Limit	Onalifiers	Date
100000												
LCS-2980/	Arsenic	mg/kg	6010B	20.22	20	c	2	75-175				200000
1000000))	i		ì	,		7				0007/7/0
LC3-2960/	read	mg/kg	6010B	20.19	70	0	101	75-125				300000

All analyses applicable to the CMA, SOWA, and RCRA are performed in accordance to NELAC protocols. Puritient enoughing information the bosted on the attribute of the school and the secondaries of accesses. In this constitution of the school and the secondaries of accesses at an accesses and accesses at an accesses at a consistent at